ELENA PAVLOVSKAIA *et al.*                                                                                    PATENT
Application No. 10/633,015
Reply to Office Action of July 19, 2007

## REMARKS

Upon entry of the amendments, claims 1-31 and 37-39 will be pending in the above-identified application. New claims 37-39 have been added. Applicants submit that new claims 37-39 are supported throughout the specification as originally filed, and therefore, no new matter is added by these amendments.

Rejections Under 35 U.S.C. §103

Claims 1-31 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,409,504 to Jones et al. (hereinafter "Jones") in view of U.S. Patent No. 5,740,266 to Weiss et al. (hereinafter "Weiss"). Applicants respectfully traverse.

Applicants respectfully assert that Examiner has failed to establish a *prima facie case* of obviousness necessary to support the rejection of claims 1-31 under 35 U.S.C. §103 because, contrary to Examiner's assertion, the combination of Jones and Weiss does not teach or suggest the claimed invention, including all elements recited in each of the presently rejected claims. In particular, Jones and Weiss, alone or in combination, at least fail to teach the recited element of defining a closed cutting surface passing through a line between the gingiva and a crown of the tooth, wherein the closed cutting surface comprises a crown portion surrounding the crown of the tooth, and wherein the crown portion of the closed cutting surface comprises a volume greater than the volume of the crown of the tooth.

Jones, while representing a considerable advancement in the art, fails to teach or suggest all of the recited limitations of any of claims 1-31 or new claims 37-39. Jones teaches computer automated techniques for subdividing, or segmenting, a digital dentition model into models of individual dentition components. As previously made of record, while the teachings of Jones might be considered similar to the currently claimed methods in the general sense that both Jones and the present invention are directed to separating dentition components, Jones fails to teach or suggest the specific techniques describe in the present specification and currently claimed.

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        In particular, Jones teaches displaying an image of a dentition model and identifying features of individual teeth (e.g., gum line, gingival margin) and then cutting along an identified freature in order to separate components of the tooth. While Jones appears to teach a tooth model having identified features (crown, gum line, modeled root), and then directly cutting along an identified feature, Jones does not teach defining a closed cutting surface that is separate or at least partially distinct from the tooth model. In particular, and as admitted by the Examiner (see, page 2 of 7/19/2007 Office Action), Jones fails to teach or suggest defining a closed cutting surface that comprises a crown portion surrounding the crown of the tooth in addition to a root portion approximating the shape of the root of the tooth, with the crown portion of the closed cutting surface having a volume greater than the crown of the tooth, as recited in claim 1.

        The newly cited reference to Weiss simply fails to teach or suggest elements missing from Jones. As an initial matter, Applicants point out that the Office action has not identified <u>where in the reference</u> to Weiss the claim elements missing from the teachings of Jones are believed to be taught. The Office action only cites the entire reference generally without identifying any particular teachings of Weiss (see, e.g., Office action, page 2). Applicants respectfully request that the Examiner identify any particular teachings of Weiss relied on by the Examiner where in the reference claim elements are believed to be taught, as doing so is necessary to satisfy the examination responsibilities of the Office (see, e.g., MPEP § 706; 37 CFR §1.104(c)(2)) and afford Applicants an opportunity respond to the rejection.

        In order to be responsive to the Office action, however, Applicants will attempt to address the cited reference. Weiss teaches image processing for the purpose of clutter elimination and outline processing and more accurately determining the shape/size of an object. Weiss teaches forming a single pixel image outline of an object in a digital image and producing a measure of the outline shape as a single number. However, Applicants are unclear what, if anything, the image processing of Weiss adds to the present rejection as the teachings of Weiss, e.g., determining risk of spina bifida from an ultrasonic image of a fetal skull (Weiss, Abstract), would appear irrelevant to the presently claimed invention involving separating gingival from a tooth on a computer model. Nowhere does Weiss teach separating dentition including defining a closed cutting surface including a crown portion and a root portion, and certainly fails to teach a

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crown portion of a closed cutting surface comprising a volume greater than the volume of the crown of the tooth, as recited in claim 1.

Thus, for the reasons set forth above, the cited references fail to teach the claimed invention as set forth in claims 1-31. New claims 37-39 will be distinguished from the cited references and allowable for a similar rationale as set forth above with respect to claims 1-31.

Accordingly, for the reasons set forth above, Applicants respectfully request withdrawal of the rejections of claims 1-31 under 35 U.S.C. §103(a).
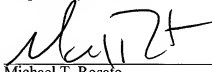
## CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 206-467-9600.

Respectfully submitted,

Dated:_____10/30/2007_____

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